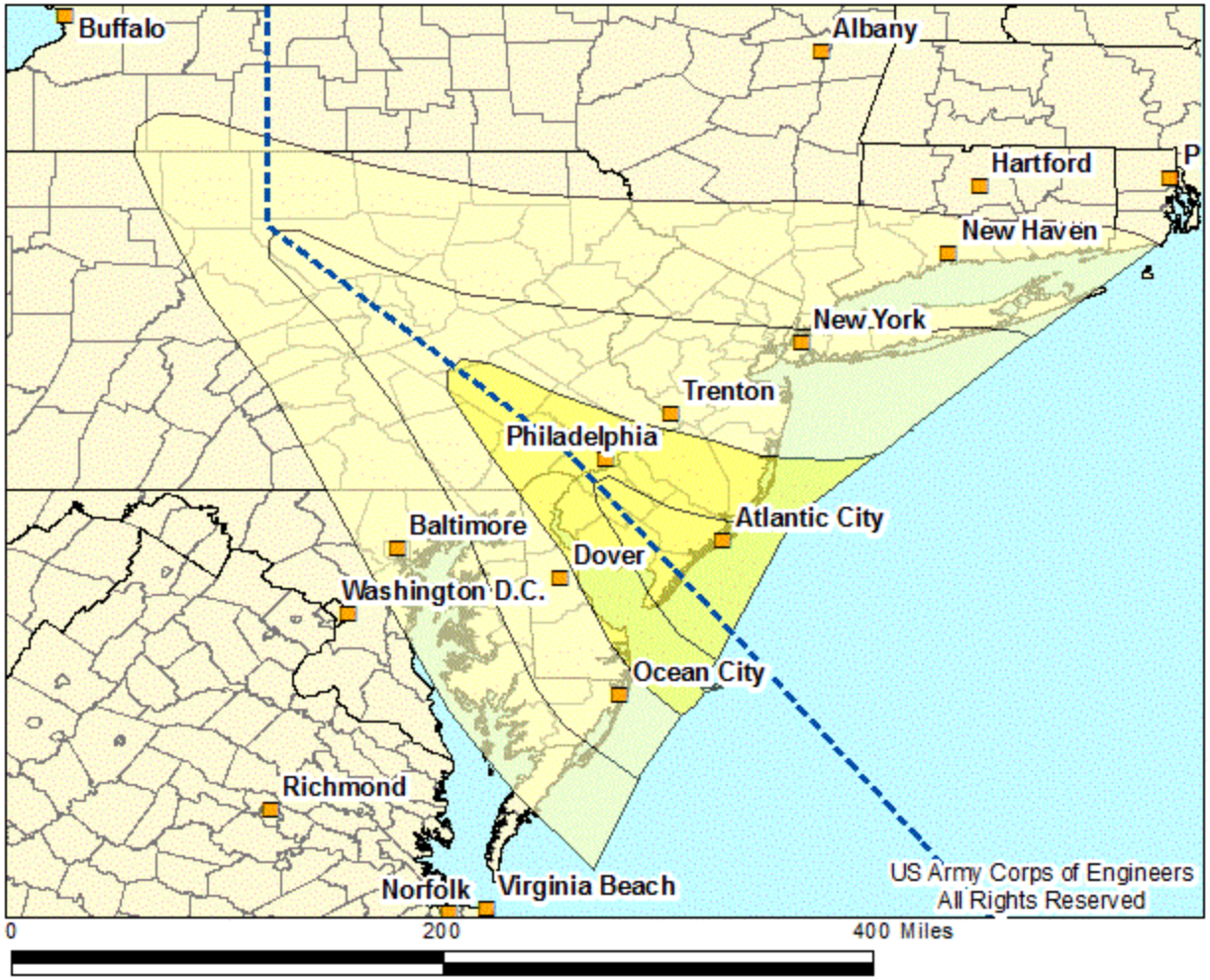
US Army Corps of Engineers

Hurricane Sandy Projected Damage Areas

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Post Landfall Projected Damage Areas

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Projected Damage Areas

- CAT 0-type damage
- CAT 1-type damage
- CAT 2-type damage
- CAT 3-type damage
- CAT 4-type damage
- CAT 5-type damage

Information provided on this page displays a projected or actual Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast and extrapolated by LRL staff to represent a landfall condition that has either occurred or may occur in the near future.

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Projected Damage Areas

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

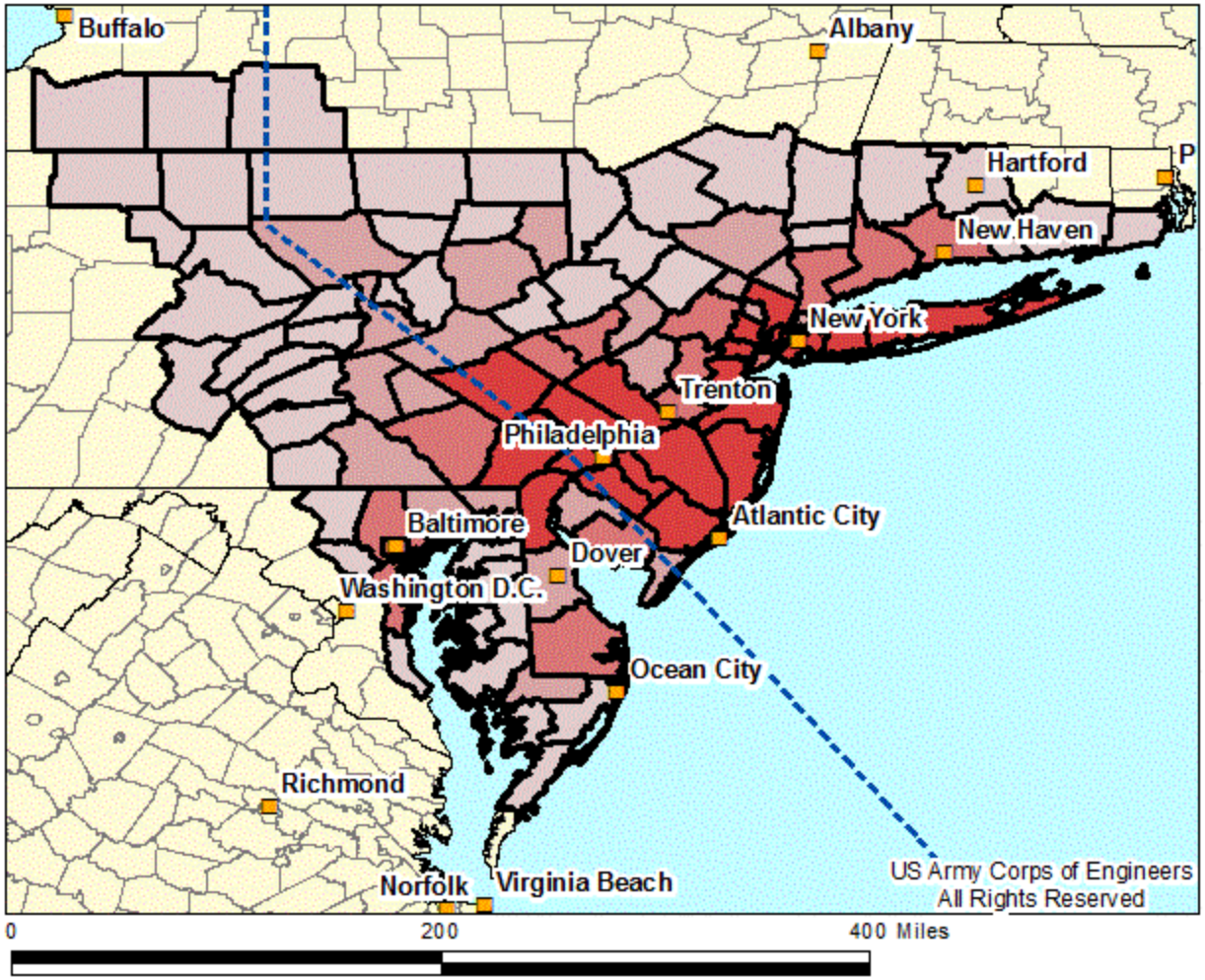
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Debris Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Post Landfall Debris Model Results

New Jersey - 9,016,000 Yards
Pennsylvania - 7,479,000 Yards
New York - 5,547,000 Yards
Maryland - 1,863,000 Yards
Delaware - 1,305,000 Yards
Connecticut - 868,000 Yards
Virginia - 20,000 Yards
Rhode Island - 19,000 Yards

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Debris

- < 100,000 cubic yards
- 100,000 - 249,999 cubic yards
- 250,000 - 499,999 cubic yards
- 500,000 - 999,999 cubic yards
- >1,000,000 cubic yards

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast. The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Debris Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Debris Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Yards per State	County	Yards per County
Connecticut		Fairfield County	367,000
		Hartford County	3,000
		Litchfield County	22,000
		Middlesex County	51,000
		New Haven County	341,000
		New London County	84,000
Connecticut	868,000		
Delaware		Kent County	168,000
		New Castle County	855,000
		Sussex County	282,000
Delaware	1,305,000		
Maryland		Anne Arundel County	323,000
		Baltimore County	479,000
		Baltimore city	368,000
		Calvert County	< 1,000
		Caroline County	33,000
		Carroll County	36,000
		Cecil County	112,000
		Dorchester County	26,000
		Harford County	158,000
		Howard County	57,000
		Kent County	17,000
		Queen Anne's County	33,000
		Somerset County	15,000
		Talbot County	27,000
		Wicomico County	104,000
		Worcester County	75,000
Maryland	1,863,000		

State	Yards per State	County	Yards per County
New Jersey		Atlantic County	608,000
		Bergen County	535,000
		Burlington County	782,000
		Camden County	880,000
		Cape May County	228,000
		Cumberland County	314,000
		Essex County	696,000
		Gloucester County	574,000
		Hudson County	522,000
		Hunterdon County	140,000
		Mercer County	388,000
		Middlesex County	866,000
		Monmouth County	718,000
		Morris County	391,000
		Ocean County	896,000
		Passaic County	241,000
		Salem County	122,000
		Somerset County	357,000
		Sussex County	80,000
		Union County	566,000
		Warren County	112,000
New Jersey	9,016,000		
New York		Allegany County	19,000
		Bronx County	222,000
		Cattaraugus County	3,000
		Dutchess County	56,000
		Kings County	950,000
		Nassau County	995,000

The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

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Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Debris Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Debris Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Yards per State	County	Yards per County
New York		New York County	531,000
(continued)		Orange County	145,000
		Putnam County	42,000
		Queens County	902,000
		Richmond County	353,000
		Rockland County	114,000
		Steuben County	3,000
		Suffolk County	855,000
		Sullivan County	20,000
		Ulster County	11,000
		Westchester County	326,000
New York	5,547,000		
Pennsylvania		Adams County	29,000
		Berks County	591,000
		Bradford County	26,000
		Bucks County	625,000
		Cameron County	< 1,000
		Carbon County	66,000
		Centre County	30,000
		Chester County	626,000
		Clinton County	35,000
		Columbia County	68,000
		Cumberland County	98,000
		Dauphin County	138,000
		Delaware County	705,000
		Huntingdon County	< 1,000
		Juniata County	11,000
		Lackawanna County	113,000
		Lancaster County	462,000
		Lebanon County	129,000

State	Yards per State	County	Yards per County
Pennsylvania		Lehigh County	315,000
(continued)		Luzerne County	217,000
		Lycoming County	141,000
		McKean County	4,000
		Mifflin County	17,000
		Monroe County	97,000
		Montgomery County	915,000
		Montour County	19,000
		Northampton County	271,000
		Northumberland County	101,000
		Perry County	24,000
		Philadelphia County	1,000,000
		Pike County	34,000
		Potter County	18,000
		Schuylkill County	163,000
		Snyder County	31,000
		Sullivan County	6,000
		Susquehanna County	8,000
		Tioga County	33,000
		Union County	36,000
		Wayne County	29,000
		Wyoming County	16,000
		York County	232,000
Pennsylvania	7,479,000		
Rhode Island		Washington County	19,000
Rhode Island	19,000		
Virginia		Accomack County	20,000

The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

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Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Debris Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Debris Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Yards per State	County	Yards per County
Virginia	20,000		
(continued)			

The amount of debris forecasted is possible total volume, not necessarily the volume that may need to be removed with Federal funds, but does not include volume that may be covered by private insurance. Debris volume may include storm surge generated debris.

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Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Debris Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

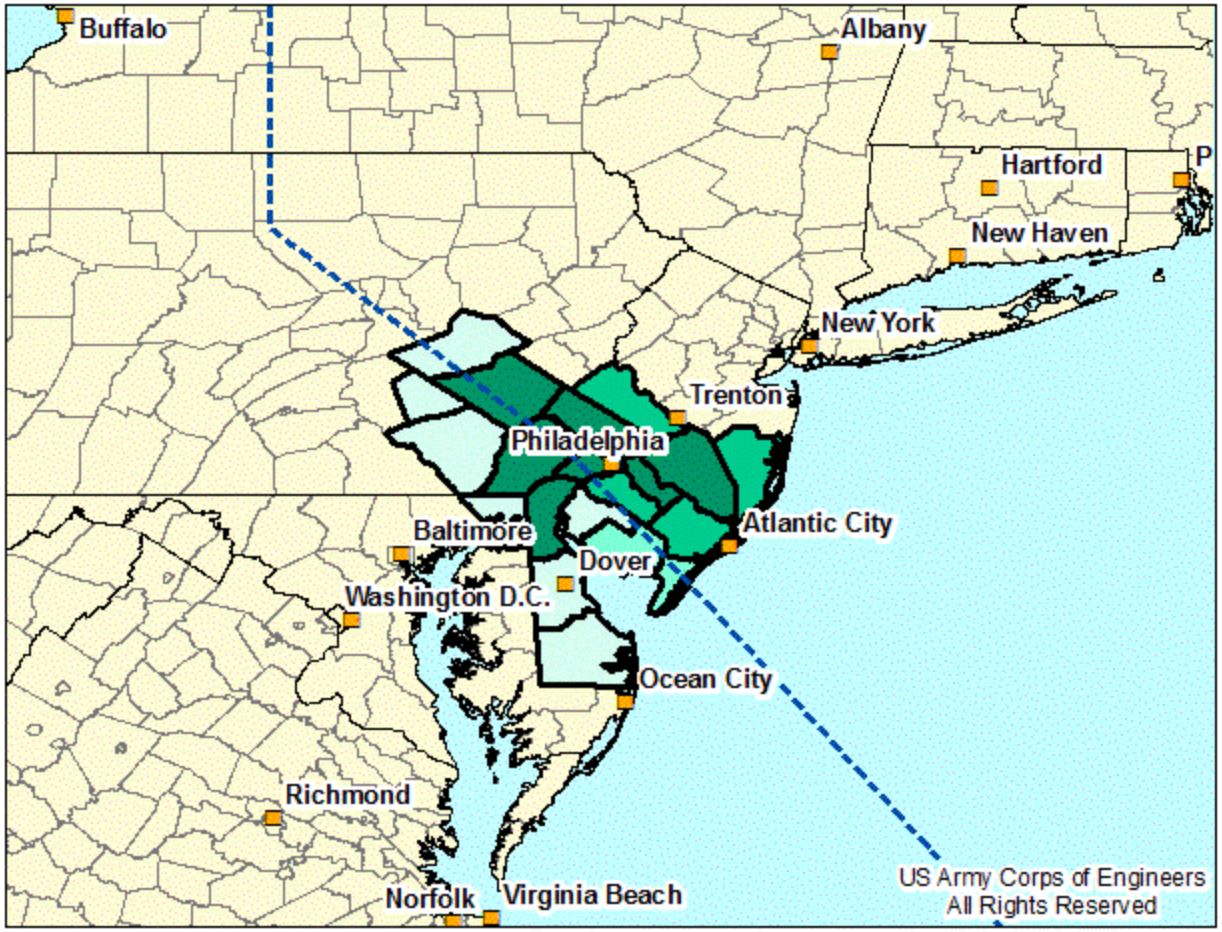
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Commodities Model

Landfall Expected In About **61** Hours

For Planning Purposes Only!



Post Landfall Water Model Results

Day One / Day Two / Day Three

PA – 45/90/180 Truckloads
NJ – 30/61/122 Truckloads
DE – 7/15/30 Truckloads
MD – 1/1/1 Truckloads

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Commodities

- < 5 Trucks Each
- 5 - 10 Trucks Each
- 11 - 20 Trucks Each
- 21 - 40 Trucks Each
- > 40 Trucks Each

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC ***(0500 EDT 10/27/2012)*** forecast. The amount of commodities forecasted is based on Mission Guide Book requirements and SME input. The graphic represents daily needs with a ramp-up in the distribution system – three days for Points of Distribution (PODs) to be fully in place and operational. Volume shown is for each commodity – water and ice. Commodity need may be supplied by multiple agencies and/or sources.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Commodities Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Commodities Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Truckloads per State	County	Truckloads per County
Delaware		Kent County	1
		New Castle County	27
		Sussex County	2
Delaware	30		
Maryland		Cecil County	1
Maryland	1		
New Jersey		Atlantic County	17
		Burlington County	25
		Camden County	30
		Cape May County	6
		Cumberland County	10
		Gloucester County	17
		Ocean County	13
		Salem County	4
New Jersey	122		
Pennsylvania		Berks County	22
		Bucks County	11
		Chester County	28
		Delaware County	33
		Lancaster County	4
		Lebanon County	1
		Montgomery County	35
		Philadelphia County	45
		Schuylkil County	1
Pennsylvania	180		

Source: US Army Corps of Engineers, All Rights Reserved

The amount of commodities forecasted is based on Mission Guide Book requirements and SME input and the above table indicates suggested daily needs based on full deployment of a commodities distribution system. Volume shown is for each commodity – water and ice. Commodity need may be supplied by multiple agencies and/or sources.

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Commodities Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

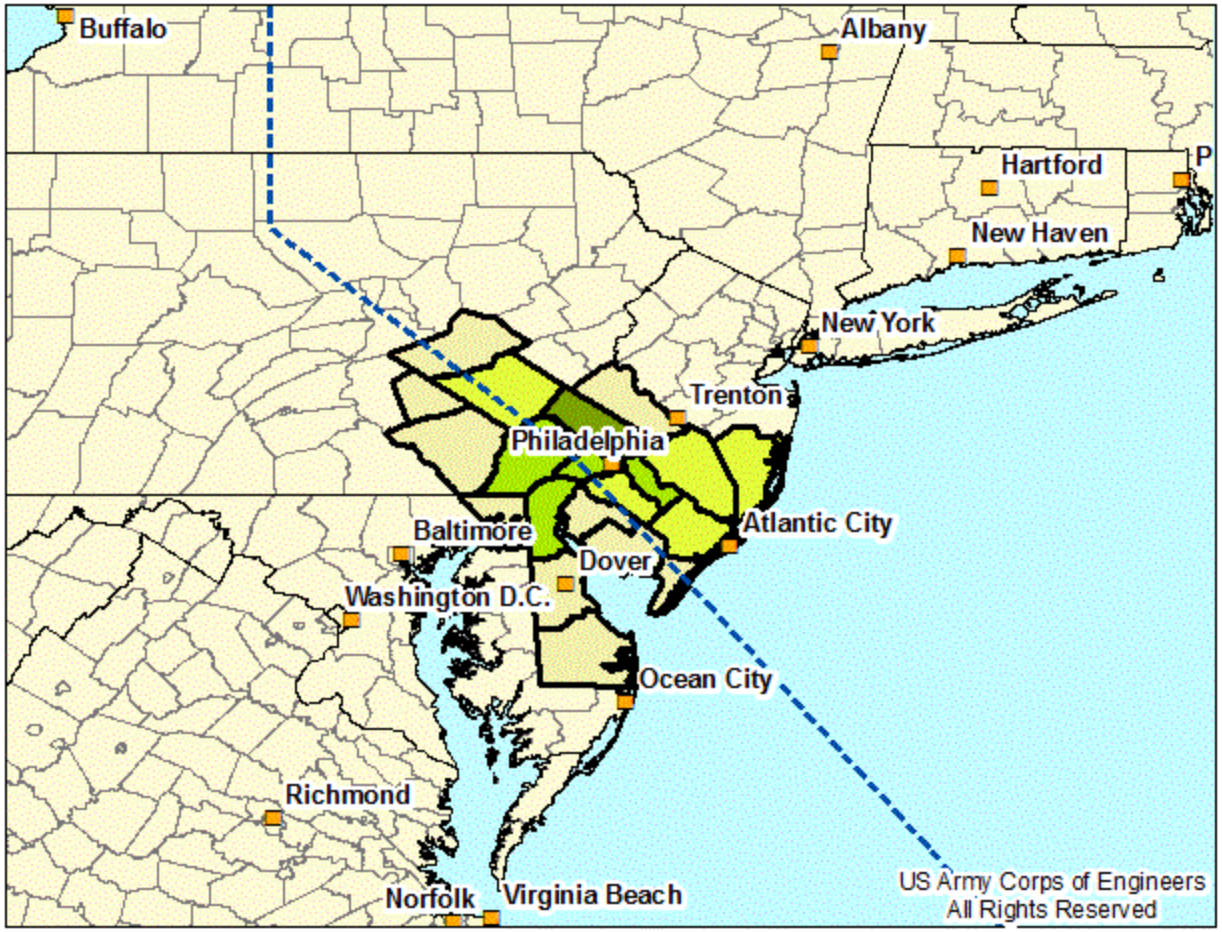
Sources:
HURREVAC
LRL-DEBRIS

Hurricane Sandy Temporary Roofing Model

US Army Corps of Engineers

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Post Landfall Temporary Roofing Model Results

Pennsylvania - 36,000
New Jersey - 18,700
Delaware - 4,700

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Temporary Roofing

- < 2,000 units
- 2,000 - 3,999 units
- 4,000 - 5,999 units
- 6,000 - 9,999 units
- > 10,000 units

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast. Temporary roofing is based on 3% in CAT 1.

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Roofing Model	
Generated By: P.Keown, LRL 0930 EDT 10/27/2012	
Sources: HURREVAC LRL-DEBRIS	Page 8 of 19

US Army Corps of Engineers

Hurricane Sandy Temporary Roofing Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	House Units per State	County	House Units per County
Delaware		Kent County	< 100
		New Castle County	4,400
		Sussex County	300
Delaware	4,700		
Maryland		Cecil County	< 100
Maryland			
New Jersey		Atlantic County	2,300
		Burlington County	3,900
		Camden County	4,500
		Cape May County	1,000
		Cumberland County	1,300
		Gloucester County	2,600
		Ocean County	2,400
		Salem County	700
New Jersey	18,700		
Pennsylvania		Berks County	3,500
		Bucks County	1,800
		Chester County	4,200
		Delaware County	5,100
		Lancaster County	500
		Lebanon County	< 100
		Montgomery County	7,000
		Philadelphia County	13,900
		Schuylkil County	< 100
Pennsylvania	36,000		

Temporary roofing is based on 3% in CAT 1.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Roofing Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

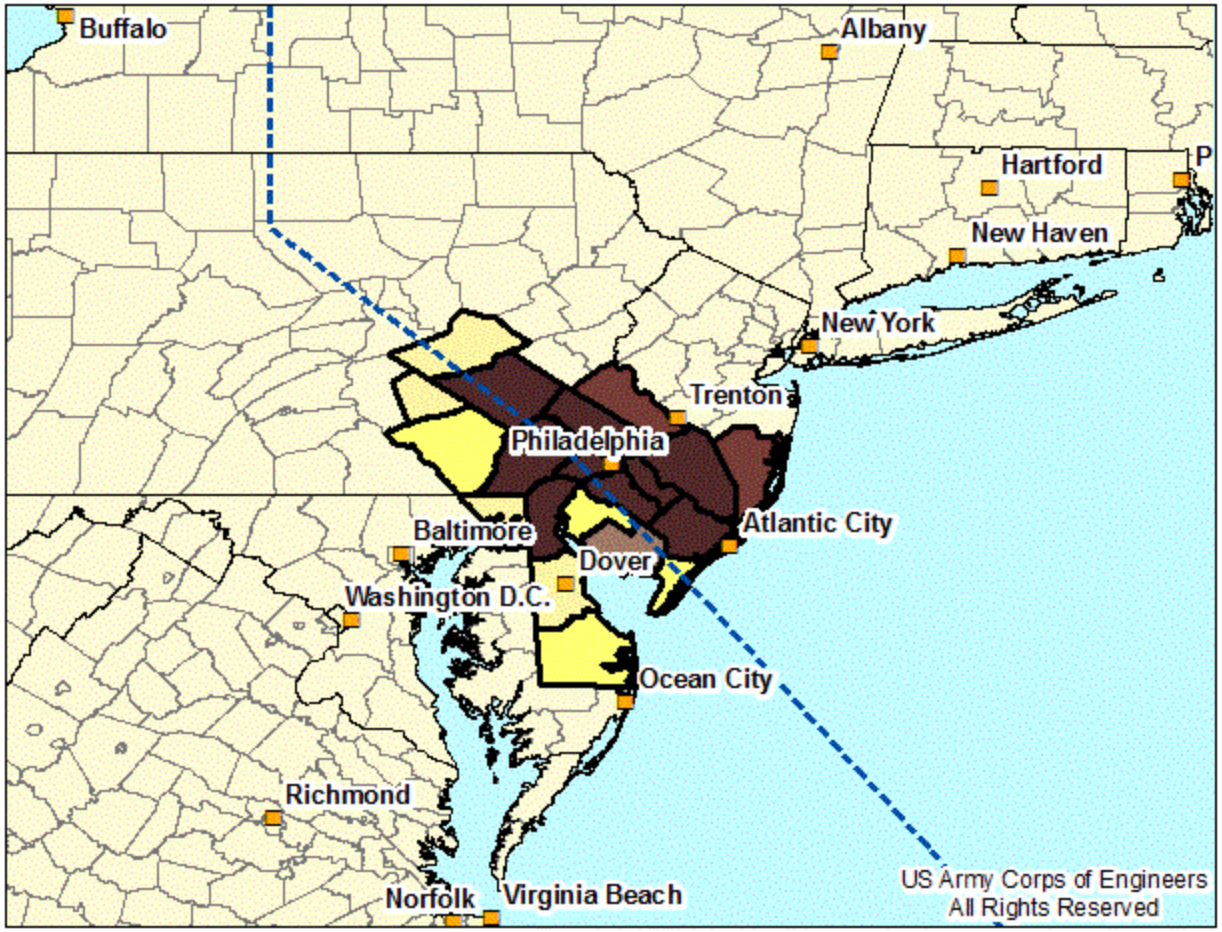
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Population Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Post Landfall Population Model Results

Pennsylvania - 3,952,000
New Jersey - 2,040,000
Delaware - 523,000
Maryland - 2,000

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Population

- < 25,000 persons
- 25,000 - 99,999 persons
- 100,000 - 174,999 persons
- 175,000 - 249,999 persons
- > 250,000 persons

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast. The numbers of persons included in this model output are those that would be included within estimated hurricane force winds (Census 2010 values adjusted to July 2011 values).

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Population Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Population Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Population per State	County	Population per County
Delaware		Kent County	2,000
		New Castle County	492,000
		Sussex County	29,000
Delaware	523,000		
Maryland		Cecil County	2,000
Maryland	2,000		
New Jersey		Atlantic County	276,000
		Burlington County	427,000
		Camden County	514,000
		Cape May County	97,000
		Cumberland County	158,000
		Gloucester County	290,000
		Ocean County	212,000
		Salem County	66,000
New Jersey	2,040,000		
Pennsylvania		Berks County	365,000
		Bucks County	185,000
		Chester County	472,000
		Delaware County	560,000
		Lancaster County	60,000
		Lebanon County	5,000
		Montgomery County	760,000
		Philadelphia County	1,541,000
		Schuylkil County	4,000
Pennsylvania	3,952,000		

The number of persons estimated to be within the hurricane force winds comes from Census 2010 values adjusted to July 2011 values.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Population Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

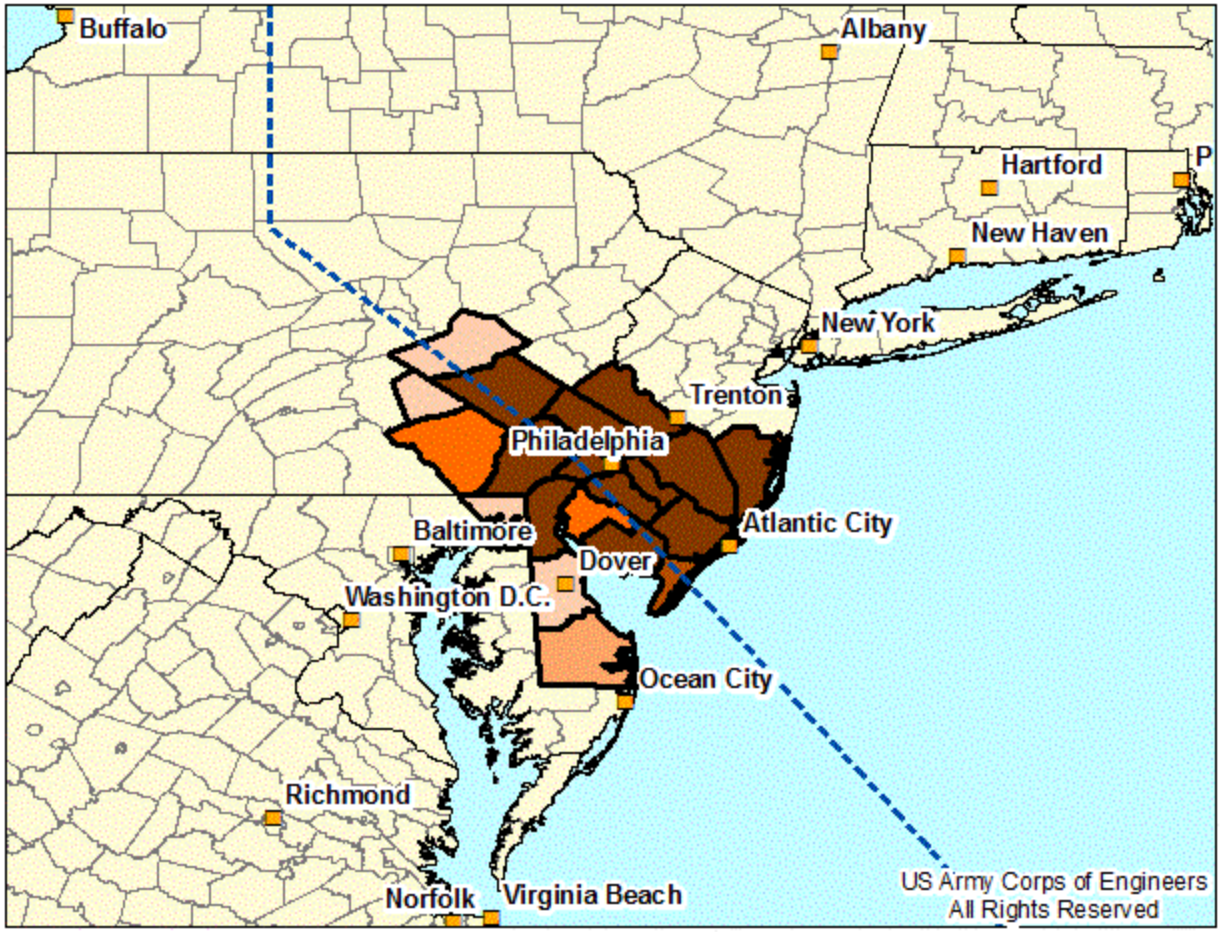
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Households Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Post Landfall Households Model Results

Pennsylvania - 1,507,000
New Jersey - 762,000
Delaware - 202,000

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Forecast Track

Households

- < 7,500 households
- 7,500 - 14,999 households
- 15,000 - 24,999 households
- 25,000 - 49,999 households
- > 50000 households

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast. The numbers of households included in this model output are those that would be included within estimated hurricane force winds (Census 2010 values adjusted to July 2011 values).

Details about this model may be obtained at http://www.englink.usace.army.mil or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Households Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Households Model

Landfall Expected In About 61 Hours

For Planning Purposes Only!

State	Households per State	County	Households per County
Delaware		Kent County	< 1,000
		New Castle County	188,000
		Sussex County	14,000
Delaware	202,000		
Maryland		Cecil County	< 1,000
Maryland			
New Jersey		Atlantic County	104,000
		Burlington County	157,000
		Camden County	188,000
		Cape May County	40,000
		Cumberland County	53,000
		Gloucester County	104,000
		Ocean County	91,000
		Salem County	25,000
New Jersey	762,000		
Pennsylvania		Berks County	140,000
		Bucks County	70,000
		Chester County	174,000
		Delaware County	210,000
		Lancaster County	20,000
		Lebanon County	2,000
		Montgomery County	290,000
		Philadelphia County	599,000
		Schuylkil County	2,000
Pennsylvania	1,507,000		

The number of households estimated to be within the hurricane force winds comes from Census 2010 values adjusted to July 2011 values.

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Source: US Army Corps of Engineers, All Rights Reserved

Hurricane Sandy Households Model

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

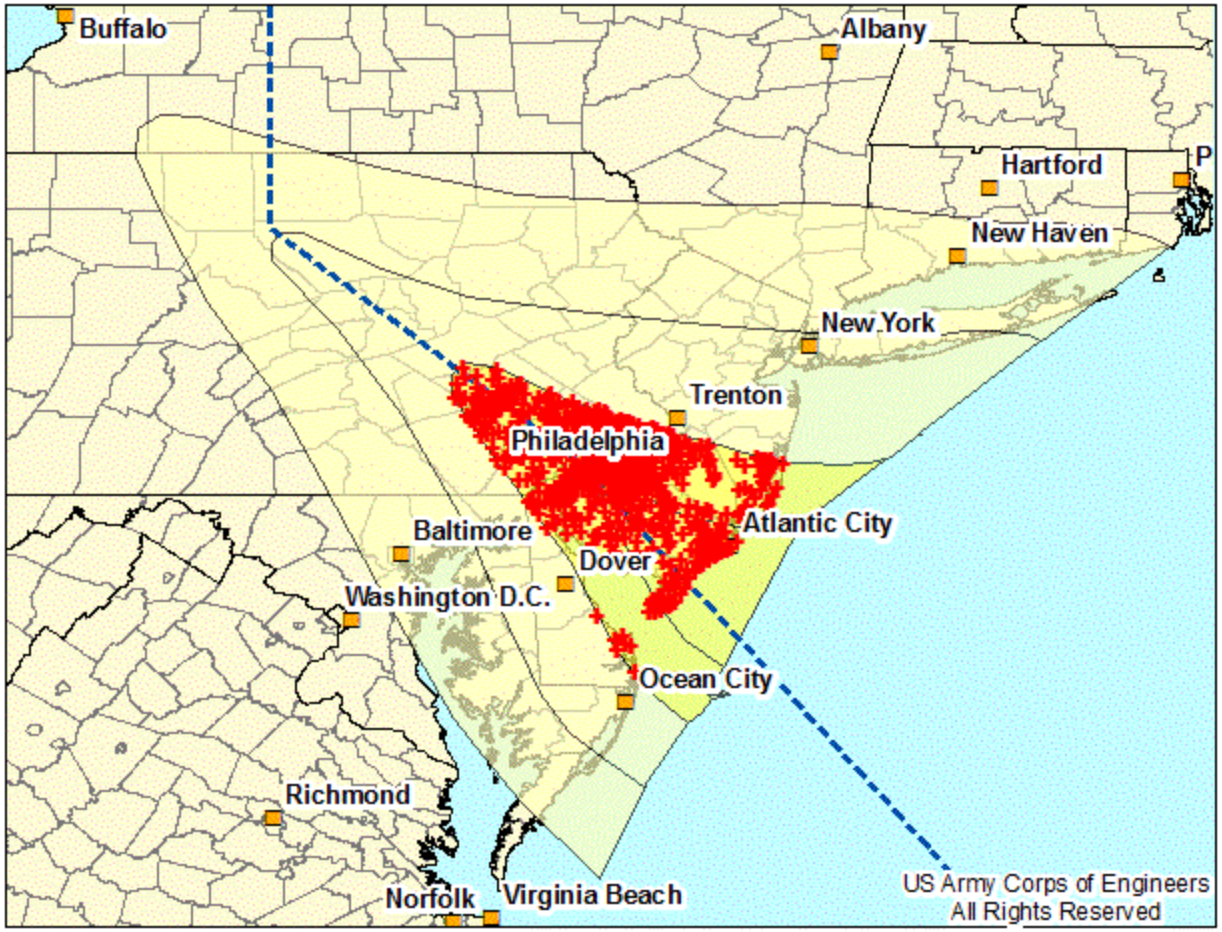
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Fire Stations

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Most Probable Landfall Fire Stations Inside Hurricane Force Winds

Pennsylvania - 404
New Jersey - 375
Delaware - 42

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

+ Fire Stations
Forecast Track

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.
The number of fire stations included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

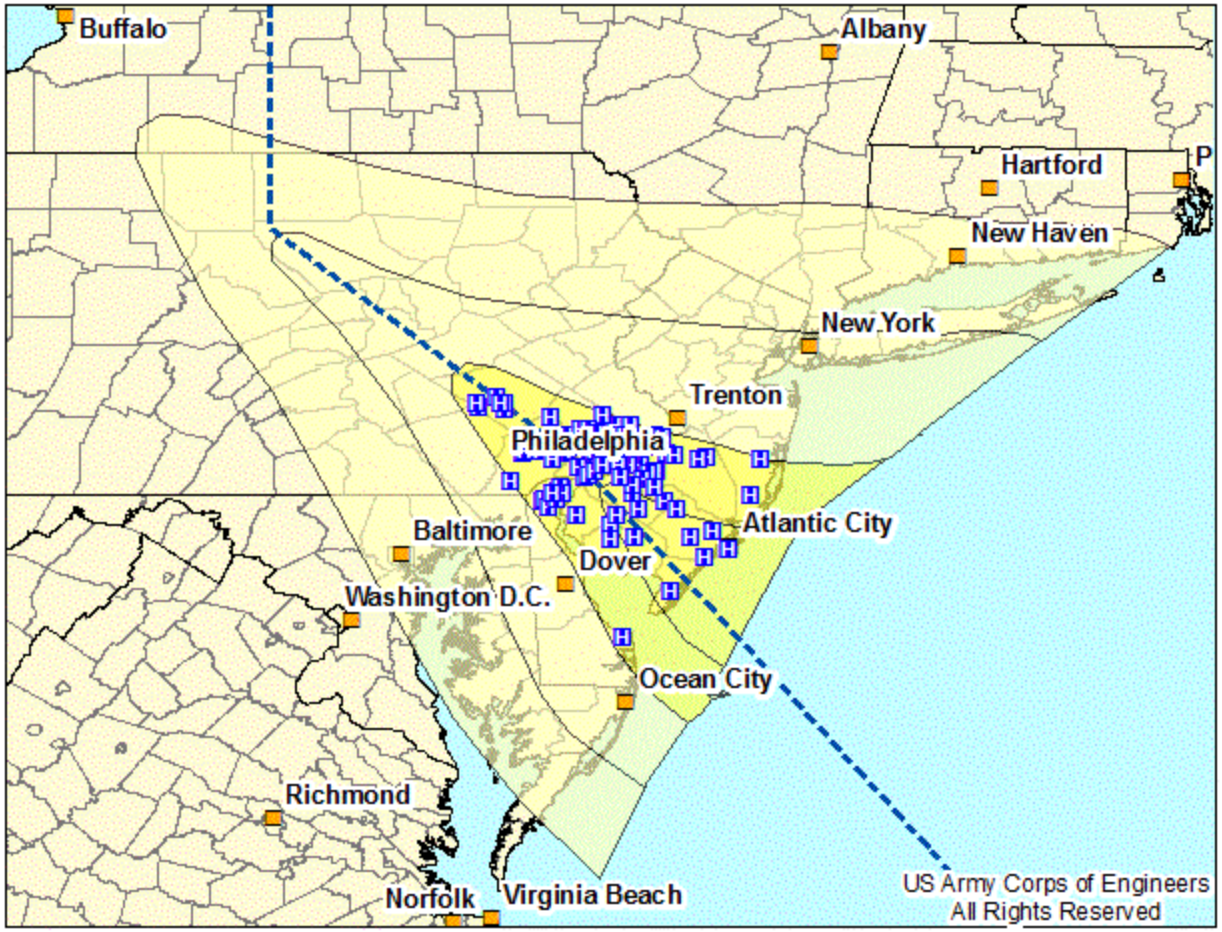
Hurricane Sandy Fire Stations	
Generated By: P.Keown, LRL 0930 EDT 10/27/2012	
Sources: HURREVAC LRL-DEBRIS	Page 14 of 19

US Army Corps of Engineers

Hurricane Sandy Hospitals

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Most Probable Landfall Hospitals Inside Hurricane Force Winds

Pennsylvania - 82
New Jersey - 41
Delaware - 11

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

H Hospitals
Forecast Track

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.
The number of hospitals included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

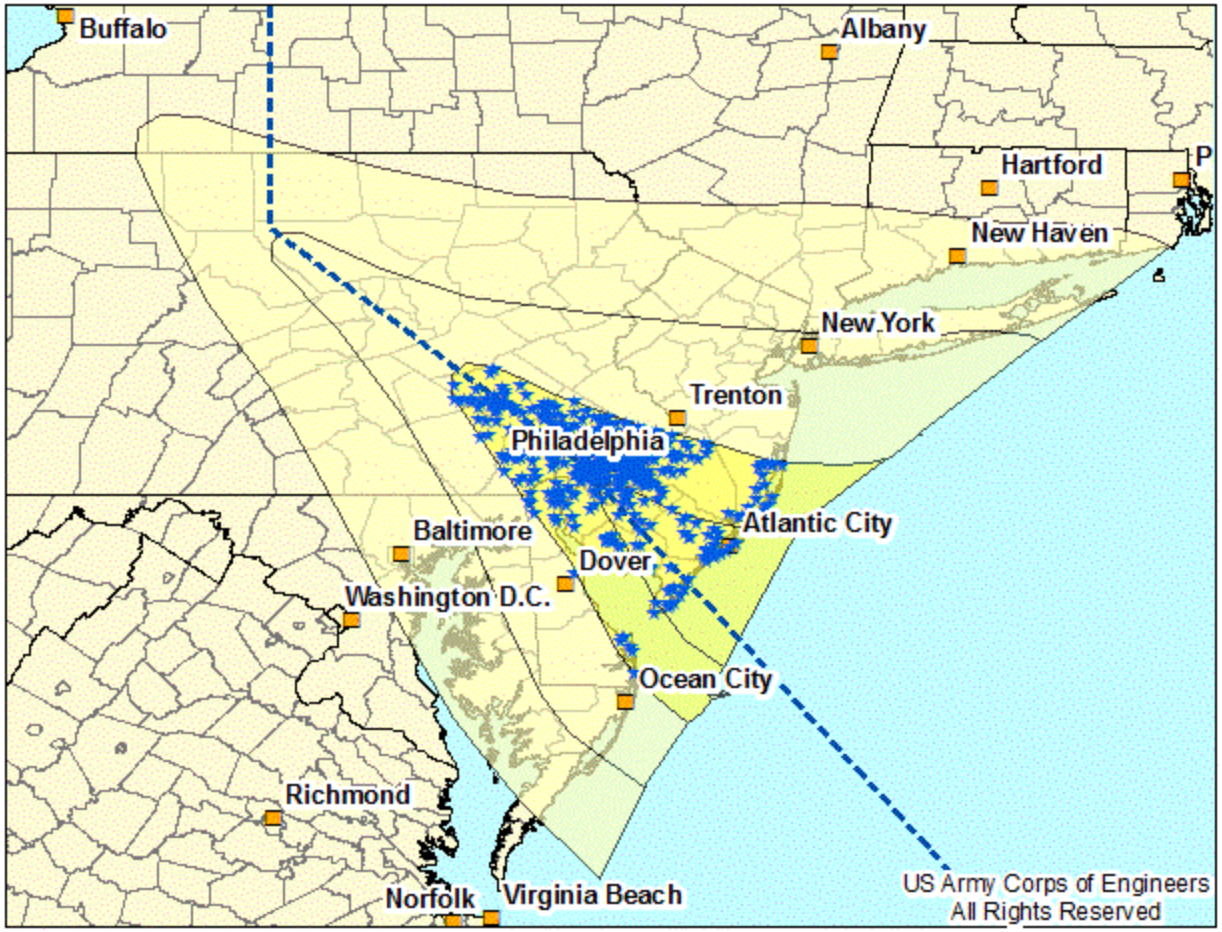
Hurricane Sandy Hospitals	
Generated By: P.Keown, LRL 0930 EDT 10/27/2012	
Sources: HURREVAC LRL-DEBRIS	Page 15 of 19

US Army Corps of Engineers

Hurricane Sandy Law Enforcement

Landfall Expected In About **61** Hours

For Planning Purposes Only!



Most Probable Landfall Law Enforcement Inside Hurricane Force Winds

Pennsylvania - 226
New Jersey - 196
Delaware - 27

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

★ Law Enforcement
Forecast Track

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.
The number of law enforcement included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Law Enforcement

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

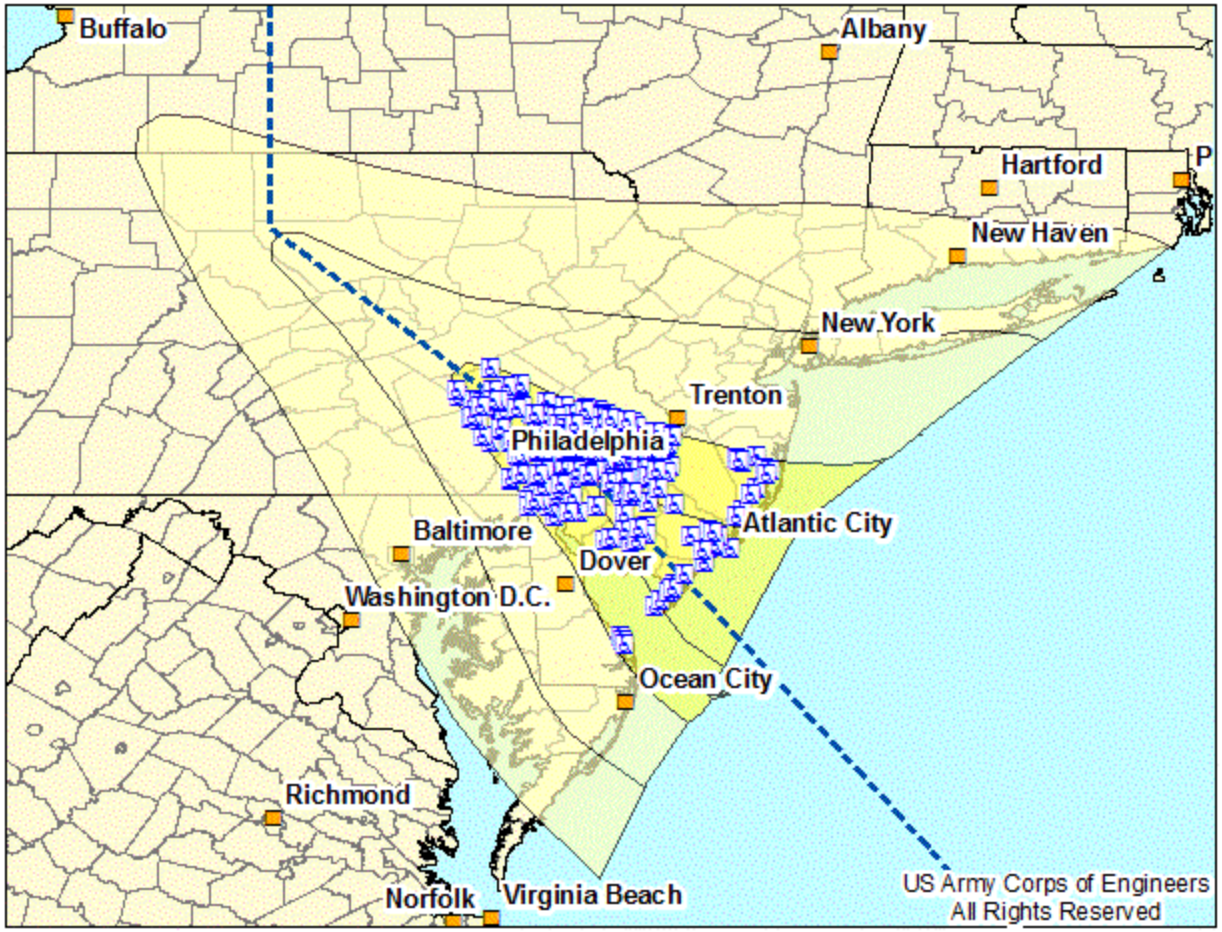
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Nursing Homes

Landfall Expected In About 61 Hours

For Planning Purposes Only!



Most Probable Landfall Nursing Homes Inside Hurricane Force Winds

Pennsylvania - 446
New Jersey - 139
Delaware - 53

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Nursing Homes
Forecast Track

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.
The number of nursing homes included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Nursing Homes

Generated By:
P.Keown, LRL 0930 EDT 10/27/2012

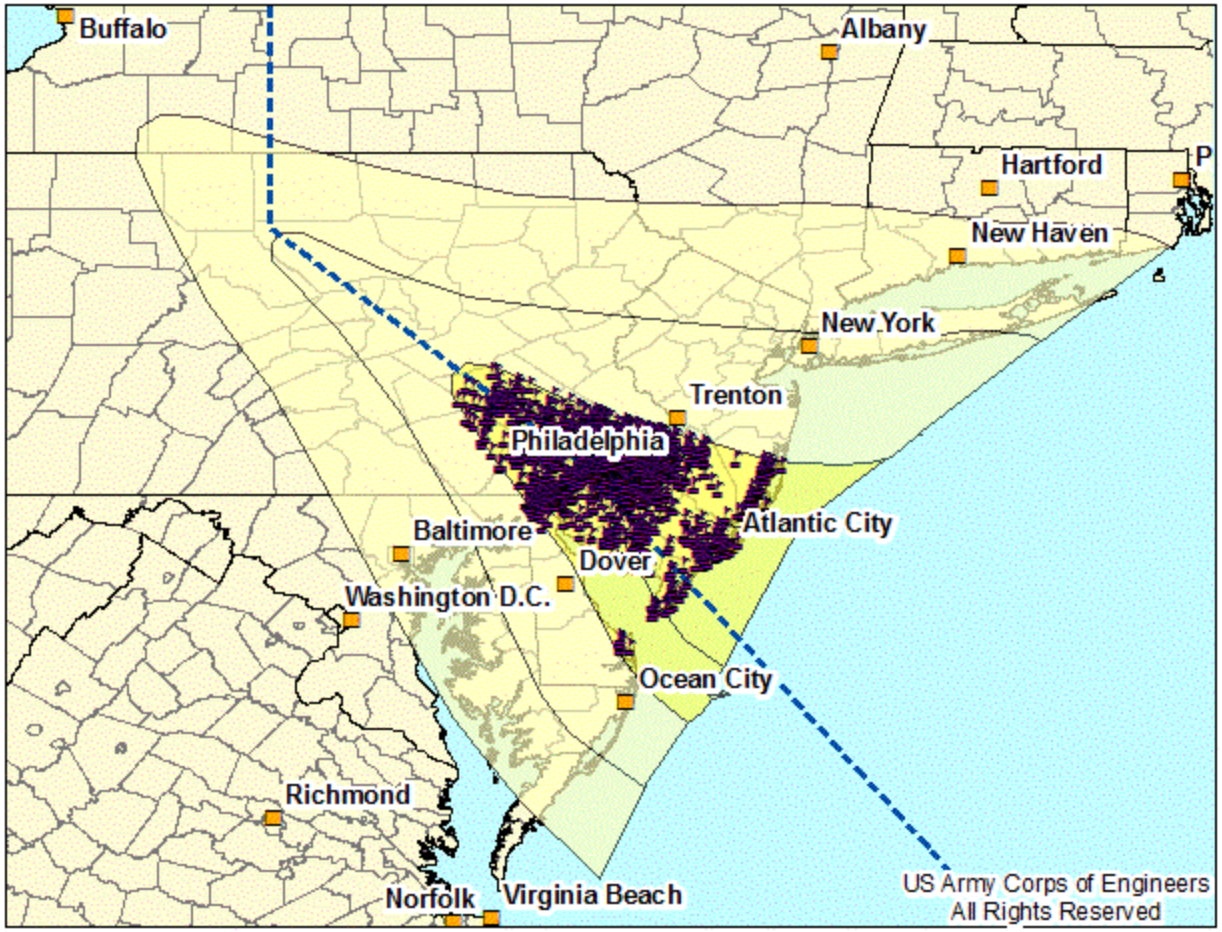
Sources:
HURREVAC
LRL-DEBRIS

US Army Corps of Engineers

Hurricane Sandy Schools

Landfall Expected In About **61** Hours

For Planning Purposes Only!



Most Probable Landfall Schools Inside Hurricane Force Winds

Pennsylvania - 858
New Jersey - 666
Delaware - 126

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.

The number of schools included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

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Hurricane Sandy Schools	
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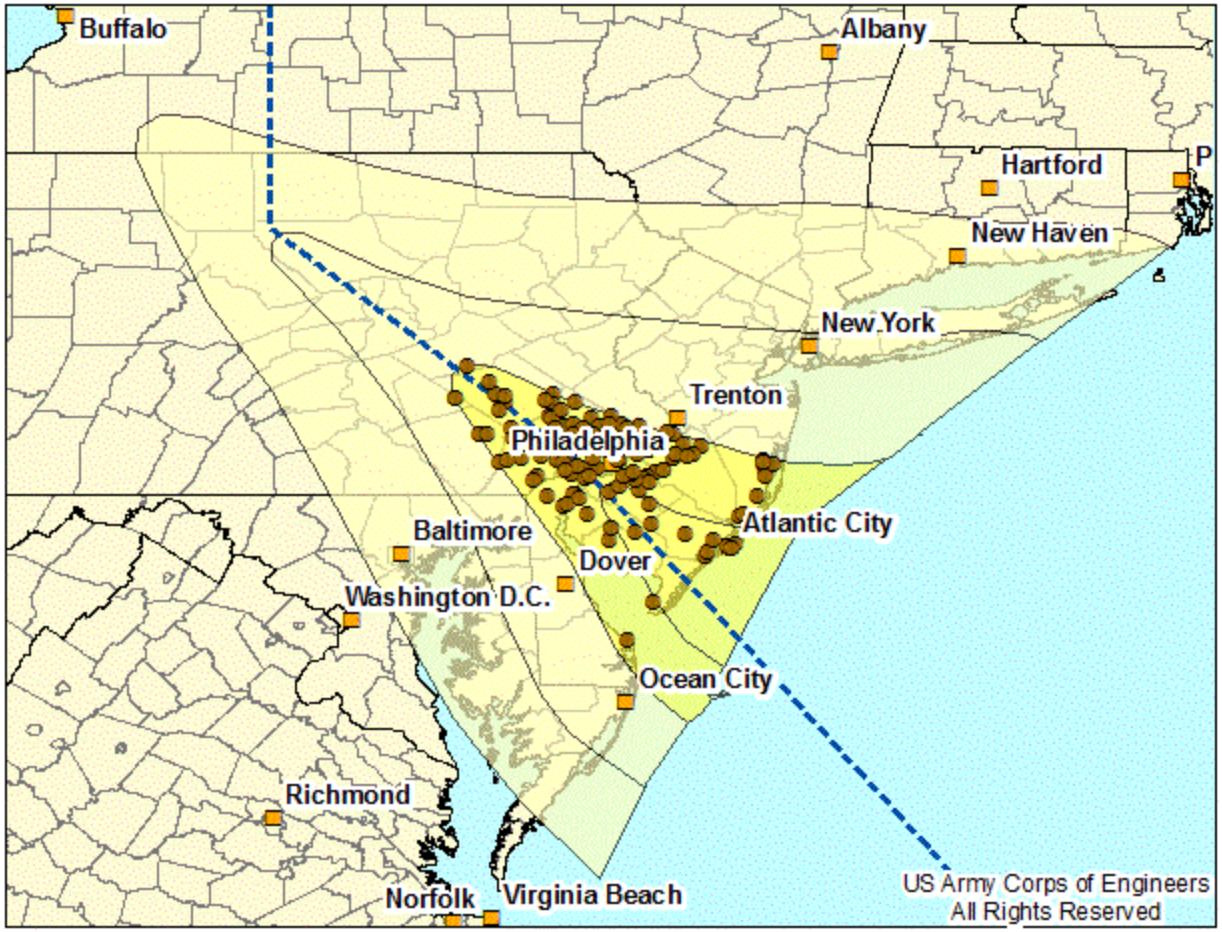
Sources: HURREVAC LRL-DEBRIS	Page 18 of 19

Hurricane Sandy Sewage Treatment Plants

US Army Corps of Engineers

Landfall Expected In About **61** Hours

For Planning Purposes Only!



Most Probable Landfall Sewage Treatment Plants Inside Hurricane Force Winds

Pennsylvania - 70
New Jersey - 65
Delaware - 2

Model results per County on following page

This model is based on a Category 1 storm making landfall coastal New Jersey.

Information provided on this page displays a Category 1 storm making landfall coastal New Jersey. These projections are based on information from the NHC (0500 EDT 10/27/2012) forecast.
The number of sewage treatment plants included in this output are those that would be included within estimated hurricane force winds (data source: HSIP Gold 2012).

Details about this model may be obtained at http://www.englink.usace.army.mil
or contact Louisville District staff at DLL-CELRL-GIS@usace.army.mil

Hurricane Sandy Sewage Treatment Plants	
Generated By: P.Keown, LRL 0930 EDT 10/27/2012	
Sources: HURREVAC LRL-DEBRIS	Page 19 of 19